UNITED
NATIONS

ST

Secretariat

GENERAL

ST/SG/AC.10/C.1/16
25 August 1986

Original: ENGLISH

COMMITTEE OF EXPERTS ON THE TRANSPORT
OF DANGEROUS GOODS

GROUP OF EXPERTS ON EXPLOSIVES

REPORT OF THE GROUP OF EXPERTS ON ITS TWENTY-SIXTH SESSION

(11-14 August 1986)

CONTENTS

	Paragraphs
ATTENDANCE	1
AGENDA	2
ELECTION OF OFFICERS	3
PACKING AND TRANSPORT OF INTERMODAL FREIGHT CONTAINERS	4 - 9
DEVELOPMENT OF THE GLOSSARY	10 - 20
TESTING OF PACKAGES OF EXPLOSIVE ARTICLES	21 - 28
THE INCLUSION OF ARTICLES IN DIVISION 1.5	29 and 30
WATER-WETTED EXPLOSIVES AND A POSSIBLE NEW DIVISION 1.6	31 and 32
OTHER BUSINESS	33 - 38
FUTURE PROGRAMME OF WORK	39
ADOPTION OF THE REPORT	40

* * *

Annex Adopted texts

GE.86-23067/4270E

REPORT

ATTENDANCE

1. Experts from the following countries: Canada; France; Germany, Federal Republic of; Italy; Japan; Norway; United Kingdom; United States of America. Observers from: China; Denmark; Finland; the Netherlands; Spain; Sweden. Representatives of specialized agencies: International Maritime Organization (IMO); International Civil Aviation Organization (ICAO). Also a representative of the European Council of Chemical Manufacturers' Federations (CEFIC).

AGENDA

2. The provisional agenda (ST/SG/AC.10/C.1/15) was adopted without change.

ELECTION OF OFFICERS

3. Mr. R. Watson (United Kingdom) and Mr. M. Mariat (France) were unanimously elected Chairman and Vice-Chairman respectively.

PACKING AND TRANSPORT OF INTERMODAL FREIGHT CONTAINERS

4. Discussion of this subject was resumed from the last session (see report ST/SG/AC.10/C.1/14, paragraph 42) with the same document ST/SG/AC.10/C.1/R.189 (United States of America) and a proposed amendment in a late paper from the Federal Republic of Germany.

5. Different criticisms were made by various experts, both of the original proposal and the proposed amendment. One expert said that the amendment of the Federal Republic of Germany was too stringent and not sufficiently forward looking. Another expert said there was some justification for such proposals for powdery substances and perhaps fireworks but not for all substances and articles of Class 1. Another said he was not clear what was the aim of the lining, was it in fact to protect from sparks in case of leakage or was it to give thermal insulation in the case of fire? Some experts felt that such a requirement for a lining put in doubt the initial packing and that if the packaging met the requirements for Class 1 substances and articles then no leakage should take place, perhaps if, for example, fireworks were better packed then no lining of the external freight container would be called for.

6. Nevertheless, there was a majority that felt some requirements of this nature were desirable and a consensus might be possible on a modified text. It was also pointed out that, editorially, a new paragraph would be more logical than an additional subparagraph to 4.7.1.

7. A compromise text was achieved for this item, the original concept being split and the comment "free from protrusions" being placed at the end of 4.7.1. (a) and the rest as a new paragraph.

8. The expert from France while still expressing his reserves concerning the desirability of any sort of lining or partial lining in freight containers nevertheless felt that he could accept this compromise. He believed that if the lining were justified by the possible presence of

explosive substance that had leaked during transport then it would be better to establish new requirements for the packagings concerned and ensure that these requirements were respected.

9. The expert from the Federal Republic of Germany, while accepting this compromise as being better than nothing, would have preferred the more stringent and far reaching version. He felt that the proposal -/R.189 (United States of America) contained the minimum requirements for safe transport and reserved his position. He said he would make a proposal to the Committee in accordance with these opinions. He also raised two further points (a) the requirement to be free from protrusions was desirable for freight containers for all classes and he wished the Committee might take note of that comment, and (b) all substances and articles of Class 1 should be carried in closed freight containers. This last was strongly contested by some experts, supported by others. It was felt that a well developed formal proposal was necessary with all consequential changes identified.

DEVELOPMENT OF THE GLOSSARY

10. Acknowledgement was made of the work done by the informal working group that met in Heimerzheim (Federal Republic of Germany), report -/C.1/R.191 and annex. First the questions posed in that report were discussed:

(1) It was felt that such an article would have to be assigned a compatibility group of its own and not necessarily that of any one particular component;

(2) They are different, UN No. 0195 being the larger, e.g. a marine distress rocket; UN No. 0054, the smaller, e.g. a Very pistol cartridge;

(3) Again a question of size, military shaped charges are in the range 10-15 kg, compared with shaped charges used by the oil industry of 50 grm. The blasting effect of the former is very much more important than the jet effect and so are rightly classified as demolition charges.

(4) The liquid fuel would be designated as an explosive if the test procedure indicated that this was so;

(5) This was probably a typographical error, "Sounding devices, explosive" should be 1D and 1.2D.

(6) It was agreed "squibs" was a difficult word particularly in translation and the three entries 0206, 0422 and 0423, should be deleted with a simple index entry of "squibs, see igniters" (the word "squibs" should be retained in French and not translated).

(7) It was agreed that the words "in units" were ambiguous and should be deleted but they should be replaced by a suitable text defining the packing requirements. Also "photo" should be deleted since the use was wider than just photographic;

(8) After discussion no change was proposed,

(9) There were different national interpretations of the term "detonating relays" and it was decided that more precision was needed in entry 49 of the glossary for Detonator assemblies for blasting. A text was agreed,

(10) This question was solved by deleting "paper or plastics",

(11) It was decided that the last sentence in definition 109 was confusing and it should be deleted,

(12) It was agreed that this list should be carefully reviewed.

11. In -/R.196 (United Kingdom) the deletion of "Cartridges, safety" had been proposed. It was clear that although some experts supported this deletion others would have found it an embarassment. The United Kingdom withdrew its paper.

12. The Group noted that the annex to -/R.191, the Glossary developed by the Heimerzheim working group, included a definition of every proper shipping name for articles. It had been based, in the main, on United Nations work and partly on IMO/CDG work. It was also being proposed to the CDG and to the Joint Meeting for RID/ADR. There was no intention that the Glossary in the Recommendations should be expanded to the same extent but it was considered desirable that an identification should be made of any differences between the two sets of descriptions. This the expert from the United Kingdom undertook to do in a paper for the Committee.

13. Before leaving -/R.191, it was agreed that the list of additional entries for the Index in paragraph 12 of that paper could be incorporated into the English version of the Recommendations (with the addition of "or highway" to Fusees) but that a very different list might need to be developed for other languages.

14. The expert from France announced that he had prepared papers tackling three linguistic, editorial problems (a) amendments to French proper shipping names, (b) resolution of the square brackets remaining in certain Glossary entries in French only and (c) development of a list of terms to be introduced into the French Index.

15. The Group passed to the examination of the square brackets remaining in the Glossary adopted at the previous session in -/C.1/14/Add.1, with the following results: "without detonator" was replaced in the description for Fracturing devices for oil wells (72);

The second half of 87 (2) starting "For the purposes of ..." was made a new subparagraph (3);

The square brackets were removed from 56.

16. A long discussion took place on Cartridges, safety, extending to cover all types of cartridges. The United States had particular difficulties

with certain types of sporting cartridges which the new tests and criteria were classifying as other than 1.4S. As a first step the "Note" to 23 was deleted.

17. Further reflection resulted in the proposal to delete entirely descriptions 23 and 26, forego the use of the term "cartridges, safety" and promote "cartridges, small arms" to proper shipping name status. This was welcomed by the expert from the United States of America as an excellent idea but the exact text and the ramifications concerning other entries for cartridges needed to be worked out carefully.

18. Document -/R.194 (Canada) concerned only linguistic differences in French and the francophones agreed to the modifications proposed.

19. The expert from the United Kingdom presented a complete text to the Group on changes to -/C.1/14/Add.1 for cartridges, including the deletion of entries 23 and 26, redrafting of 25, 28, 29 and 31 and the consequential amendments. After discussion and some modifications, these were all agreed, including the removal of square brackets from 30.

20. In addition to the paper promised by the United Kingdom in paragraph 12 above, the Netherlands said they would make a proposal that all the proper shipping names not appearing in the Glossary for the Recommendations (i.e. -/C.1/14/Add.1) should be included therein.

TESTING OF PACKAGES OF EXPLOSIVE ARTICLES

21. Document -/R.198 (United Kingdom) was a proposal for an amendment to 9.7.3.5.6 of chapter 9 to meet a problem concerning, in particular, metal outer packagings for heavy articles. The expert from the Federal Republic of Germany questioned if the proposed amendment took into account the fact that the outer packaging not only should prevent the contents from spilling out but should also protect the contents from outside influences, for example damp. After a general agreement that this would be covered by 9.7.3.5.4 he withdrew any objections. There were some queries on the principles involved and the role of previous paragraphs and the possible deletion of the complete paragraph or the extension of the amended paragraph to other classes. The amendment was finally adopted in a modified form.

22. Attention had been drawn to errors in the English version of ST/SG/AC.10/11, 33.4 where the second paragraph should start: "If detonation takes place at 5 m ...", and the table of contents where Test 3 (c) should be attributed to France and the United States of America. Document -/R.200 (Federal Republic of Germany) drew attention to a long standing error in the same publication, in 19.6, both English and French, the second sentence should finish "in test type 3 (c)". The expert from France redrafted a sentence in 7.3.5 (French version only) to render it more accurate.

23. France in a late paper had suggested an addition to 4.2.7 of chapter 4 relating to establishing the competence of testing laboratories. While recognizing a legitimate concern most experts felt it too difficult a

concept to translate into the Recommendations. The expert from France said he would reflect on the discussion before pursuing the subject further.

24. The expert from the United States of America reopened discussion on his problem concerning small arms ammunition as it was reflected in the testing procedure under 44.4.5 of the manual which was giving positive results i.e. 1.4C instead of 1.4S for certain sporting cartridges which formerly would have been transportable as 1.4S. He believed the problem lay with 44.4.5 (a) and "indentation" of the 2 mm witness screens.

25. Recent fire tests in the United States had resulted in the assignment of 1.4C to several different types of commonly transported small arms ammunition (including those of non-United States manufacture) such as 30.06 and 0.357 magnum. In his view, the criteria was too stringent for small arms ammunition with inert projectiles and also severe restrictions were about to be imposed on transport of these materials aboard passenger aircraft.

26. The Chairman pointed out that past records, and he quoted the report -/C.1/12, paragraph 34, did not indicate firm experimental data as a basis for the criteria developed for 44.4.5 in the fire test. Other experts said that to date they had not identified a problem but would investigate the matter nationally. The expert from the United Kingdom said care would have to be taken not to introduce change just because the existing situation was inconvenient to some countries. He understood that ICAO accepted 1.4S explosives on passenger aircraft on the basis of the newly-developed criteria.

27. Consistent with statements in earlier reports of the Group, the expert from the United States of America stated that, pending further evaluation of the criteria for 1.4S, he intended to assign 1.4S to all small arms ammunition with solid projectiles commonly used by civilians including ammunition arriving in the United States from other countries.

28. The observer from the Netherlands informed the Group of the work Programme of the International Group of Experts on the Explosion Risks of Unstable Substances (IGUS), under the aegis of the Organisation for Economic Co-operation and Development (OECD), in connection with the United Nations tests methods for Class 1. He described the useful work done by IGUS when preparing proposals for test methods for peroxides. The United Kingdom Chairman of IGUS had proposed that if development of improvements to the explosives tests should prove difficult within the United Nations forum, then IGUS would try to provide a focus for the exchange of information and technical views, subject to available resources. This would be discussed at the Steering Group of IGUS on 19 August. The Group of Experts noted the information.

THE INCLUSION OF ARTICLES IN DIVISION 1.5

29. The expert from the United States of America introduced his document -/R.195 and a revision of that document in a late paper. The expert from France had made detailed comments in a late paper. The expert from the United States of America found the test series 7 suggested

by France generally acceptable and noted that developing countries might prefer the French friability test to the United States Susan test because of the difference in cost.

30. Other experts queried various aspects of the philosophy involved such as compatibility difficulties; segregation requirements; deterioration or improvement in transport safety, etc. Nevertheless, several experts expressed their support, in principle, for the inclusion of articles in 1.5 and the development of a test series 7. Following a lengthy discussion and the drafting of a revised text for Division 1.5 in 1.12 of chapter 1 by a working group, the definition (see annex to this report) was adopted without dissent.

WATER-WETTED EXPLOSIVES AND A POSSIBLE NEW DIVISION 1.6

31. This was a subject still unresolved from previous sessions, but the Group of Experts had been asked to come to a firm decision so that the Joint ADR/RID Group would know where it stood in this matter. The delegate from Belgium, in that forum, had been most pressing and a document of his was available to the experts (TRANS/GE.15/AC.1/R.288). The expert from Norway, who had promised to try and make a proposal, announced that when researching for his paper, he had found practically no evidence on which to base a proposal so had been unable to produce a valid justification.

32. Most experts expressed opposition to a Division 1.6, and, after hearing that only two substances listed in the Belgian document were carried internationally, the Group of Experts decided there was no justification for a new division, and those water-wetted substances should not be classified in Class 1. The expert from the United States of America stated his opposition to the adoption of a Division 1.6 was regardless of the number of substances involved.

OTHER BUSINESS

33. In document -/R.192, Norway had developed the proposal originally made in -/R.125, with test results and justification. All the amendments proposed were adopted.

34. Document -/R.193 (Netherlands), the concept of this proposal was achieved by adding the word "equivalent" and "(see 4.2.5 (c))" to 10.2.5.

35. In document -/R.197 (United Kingdom), to facilitate the transport of samples under UN No. 0190, a Packing Group E103 and a small amendment to Special Provision 16 had been proposed. It was adopted.

36. In document -/R.199, Italy proposed the addition of fibreboard boxes to E15. It was adopted.

37. In a late paper, the United Kingdom proposed a change to the antiquated name of UN No. 0144 i.e. from "Nitroglycerin, spirit of" to "Nitroglycerin, in alcohol". This was adopted.

38. Another late paper from Italy was aimed largely at replacing the reference to competent authorities in packing methods such

as E102, E138. However, there were judged to be too many implications associated with the proposal and the expert from Italy was asked to present a formal document. It was generally agreed that the scope of this proposal should be extended and, since the revision of certain existing provisions in chapter 10 was urgent the expert from the United Kingdom promised to provide additional information to Italy.

FUTURE PROGRAMME OF WORK

39. The Group of Experts considered they had largely completed the priority topics chosen by the Committee at its thirteenth session. They suggested to the Committee at its fourteenth session that the next biennium should see:

(i) An examination of the results of the Test Manual and the development of a test method to classify 1.4S goods and distinguish them from 1.4C

(ii) Develop a test series (7) and criteria for Division 1.5

(iii) Revision of chapter 10, particularly as regards the elimination of references to competent authorities and replacement by suitable packing methods

(iv) General review of chapter 4.

ADOPTION OF THE REPORT

40. The Group of Experts adopted the report on its twenty-sixth session together with its annexes.

Annex

Adopted texts

Chapter 1

Amend the last paragraph of 1.12 to read:

Division 1.5 Very insensitive substances and articles

This division comprises:

(a) Substances which have a mass explosion hazard but are so insensitive that there is very little probability of initiation or of transition from burning to detonation under normal conditions of transport.

Note: The probability of transition from burning to detonation is greater when large quantities are carried in a ship.

(b) Articles which contain only extremely insensitive detonating substances and which demonstrate a negligible probability of accidental initiation or propagation.

Note: The risk from articles of Division 1.5 is limited to the explosion of a single article.

Chapter 2

Under UN No.0374 change 1.1E to read 1.1D and under UN No.0375 change 1.2E to read 1.2D.

Delete entries 0206, 0422 and 0423 for SQUIBS.

Amend UN Nos.0094 and 0305 to read: "FLASH POWDER".

Delete entry UN No.0096, Division 1.2G, since Flash powder has been accepted as a substance.

CARTRIDGES, FLASH 1.1G and 1.3G, UN Nos.0049 and 0050, have been allocated Packing Method E20 in error as they are articles, amend this to E115.

UN No.0072: Delete the second part beginning with "or CYCLOTRI-" etc.

UN No.0118: Delete reference to Special Provision 9.

UN No.0226: Delete the second part beginning with "or CYCLOTETRA-" etc.

UN No.0266: Delete reference to Special Provision 21.

Add new UN No.xxx: "CYCLOTRIMETHYLENETRINITRAMINE, (CYCLONITE, HEXOGEN, RDX), DESENSITIZED. 1.1D, Packing Method E6".

Add new UN No.xxx: "CYCLOTETRAMETHYLENETETRANITRAMINE, (OCTOGEN, HMX), DESENSITIZED. 1.1D, Packing Method E6".

UN No.0190: Add E103 under Packing Method.

Amend UN No.0144 to read:

"NITROGLYCERIN SOLUTION IN ALCOHOL with more than 1 per cent but not more than 10 per cent nitroglycerin".

For UN Nos.0012 and 0323, delete "(CARTRIDGES SAFETY)".

For UN No.0014, delete "(CARTRIDGES SAFETY, BLANK)".

Add alternative name and description "(CARTRIDGES, SMALL ARMS)" to UN Nos. 0012, 0328, 0339.

Add alternative name and description "(CARTRIDGES, SMALL ARMS, BLANK)" to UN Nos.0014, 0327 and 0338.

Chapter 2 (cont.) (Does not apply to English text)

Index

Under SOUNDING DEVICES, EXPLOSIVES UN No.0374 change 1.1E to read 1.1D and UN No.0375 change 1.2E to 1.2D.

Delete all entries under "SQUIBS" replace by

"Squibs, see	1.4S	0454	
	1.4G	0325"	

Amend the entry for "Detonating relays, see ..." to read

"1.1B	0029	
1.1B	0360	
1.4B	0267	
1.4B	0361"	

Delete all entries under PHOTO-FLASH POWDER.

Amend Flash powder, in units, to read FLASH POWDER	1.1G	0094
	1.3G	0305

Delete entries for "CARTRIDGES SAFETY" and "CARTRIDGES SAFETY, BLANK".

Delete entire entry for "Ammunition, SA (Small Arms)".

Add the following:

"CARTRIDGES, SMALL ARMS, see.....	1.2C	0328
	1.4C	0339
	1.4S	0012"

Delete entry for "Cartridges, Sporting".

Add the following:

"CARTRIDGES, SMALL ARMS, BLANK, see		1.3C	0327
		1.4C	0338
		1.4S	0014"

Index (cont.)

Add the following entries (English only)

Ammunition, fixed)		1.1F	0005
Ammunition, semi-fixed)	see	1.1E	0006
Ammunition, separate loading)		1.2F	0007
		1.2E	0321
		1.4F	0348
		1.4E	0412
Cartridges, illuminating	see	1.2G	0171
		1.3G	0254
		1.4G	0297
Explosives, emulsion	see	1.1D	0241
		1.5D	0332
Flares, highway)		1.4G	0191
Flares, distress, small)	see	1.4S	0373
Fusees, railway or highway)			
Missiles, guided	see	1.1F	0180
		1.1E	0181
		1.2E	0182
		1.3C	0183
		1.2F	0295
		1.1J	0397
		1.2J	0398
		1.2C	0436
		1.3C	0437
		1.4C	0438
Plastic explosives	see	1.1D	0084
Propellants with a single base)		1.1C	0160
Propellants with a double base)	see	1.3C	0161
Propellants with a triple base)			
Warheads for guided missiles	see	1.1D	0286
		1.2D	0287
		1.1F	0369
		1.4D	0370
		1.4F	0371

Chapter 3

Delete Special Provisions 9 and 21.

Amend first sentence of Special Provision 16 to read:

"Samples of new or existing explosive substances or articles may be transported and shipped as directed by the competent authorities for purposes including: testing; classification; research and development; quality control; or as a commercial sample..."

Amend Special Provision 14 to read:

"Nitroglycerin solution in alcohol of not more than 5 per cent concentration, ... (remainder unchanged)."

Chapter 4

4.7.1(a) should read:

"... structurally serviceable and the interior floor and walls are free of protrusions;"

New 4.7.3 For free-flowing powdery substances of 1.1C, 1.1D, 1.1G, 1.3C and 1.3G and fireworks of 1.1G, 1.2G and 1.3G, the floor of a freight container should have a non-metallic surface or covering.

Table 4.3

Amend as consequence of changes in descriptions of substances and articles e.g. change "Photo-flash powder in units 0094, 0096, 0305" to "Flash powder 0094, 0305".

Delete entry for "Cartridges Safety".

Add the following "Cartridges, Small Arms, 0012, 0328, 0339".

Delete entry for "Cartridges, Sporting".

Add the following:

"Cartridges, Small Arms, Blank 0014, 0327, 0338."

Chapter 9

Amend 9.7.3.5.6 to read as follows:

"No rupture is permitted in packagings for goods of Class 1 which would permit the spillage of loose explosive substances or articles from the outer packaging."

Chapter 10

10.2.5, amend to read:

"10.2.5 Where boxes of ordinary natural wood are specified, equivalent plywood or reconstituted wood may be substituted for that material, provided that they are compatible with the explosive carried (see 4.2.5 (c))."

Table 10.1, Packing Method E15, add:

"fibreboard boxes (4G)"

under Outer packagings (b).

Table 10.2 Add new particular packing requirement (PPR)

"55 Not more than 50 g of substance may be packed in an inner packaging."

Table 10.1 Add this new PPR 55 to Packing Method E20.

Amendments to Tests and Criteria (ST/SG/AC.10/11)

Contents of Part I

Test series 3 (c) Country of origin should read "F and USA" (English only).

33.4, second paragraph (English only) should read: "If detonation takes place at 5 m or less ..."

19.6, second sentence should read: "However, the question in Box 11 is answered 'yes' only if a '+' is obtained in test type 3 (c)."

Changes to the Glossary (ST/SG/AC.10/C.1/14/Add.1)

Under "1. Ammunition" delete "Cartridges, Sporting" and "Cartridges Cannon".

Amend definition 20. Cartridges, flash to read:

"Articles consisting of a casing, a primer and flash powder, all assembled in one piece ready for firing."

Definition 22, delete last sentence commencing: "The term Cartridges Safety".

Definition 23, delete entire entry.

Amend definition 25 as follows, and make it an alternative name and description (PSN) */ to some "CARTRIDGES FOR WEAPONS" entries.

---

*/ Proper Shipping Name.

"25. Cartridges, Small Arms

Articles designed to be fired in weapons of calibre not larger than 19.1 mm. They consist of cartridge cases, fitted with a centre or rim fire primer and containing a propelling charge together with a solid projectile(s). (See also Cartridges Blank)."

-/C.1/14/Add.1, page 9, paragraph 26, delete entire entry.

Amend definition 28 as follows:

"28. Cartridges for Weapons

(1) Fixed (assembled) or semi-fixed (partially-assembled) ammunition designed to be fired from weapons. Each cartridge includes all the components necessary to function the weapon once. The name and description should be used for military small arms cartridges that cannot be described as 'cartridges, small arms'. Separate loading ammunition is included under this name and description when the propelling charge and projectile are packed together (see also 'Cartridges, blank').

(2) Incendiary, smoke, toxic and tear-producing cartridges are described in this Glossary under 'Ammunition, Chemical, Explosive'."

Amend definition 29 as follows:

"29. Cartridges, Blank

Articles which consist of a cartridge case with a centre or rim fire primer and a confined charge of smokeless or black powder but no projectile. Used for training, saluting or in starter pistols, etc."

Amend definition 31, as follows:

"31. Cartridges for Weapons, with inert projectile

Ammunition comprised of a projectile without bursting charge but with a propelling charge and means of ignition. The presence of a tracer can be disregarded for classification purposes provided that the predominant hazard is that of the propelling charge."

Amend definition 49. Replace last sentence with "Detonating Relays incorporating detonating cord are included. Other Detonating Relays are included in Detonators, Non-Electric."

Definition 109. Projectiles, delete the last (second) sentence.